



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,405	03/26/2004	Takahiro Usui	9319S-000709	1284

27572 7590 02/13/2006

HARNESSE, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER

VO, ANH T N

ART UNIT	PAPER NUMBER
----------	--------------

2861

DATE MAILED: 02/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/812,405	Applicant(s) USUI, TAKAHIRO	
	Examiner Anh T.N. Vo	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-5 and 10-14 is/are rejected.
- 7) ☒ Claim(s) 6-9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/26/04 & 8/06/04</u> | 6) <input type="checkbox"/> Other: ____ |

Art Unit: 2861

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The references cited on PTO 1449 have been considered.

Drawings Object to

The drawings are objected to in that Figures 12A-12B and 13 should be labeled as --Prior Art--. Correction is required.

CLAIM REJECTIONS

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1 and 12 are rejected under 35 USC 102 (a) as being anticipated by Kolb et al. (Pub No. US 2004/0001921A1)

Kolb et al. disclose in Figure 4 a coating apparatus comprising:

Art Unit: 2861

- a liquid drop emitter having a liquid drop ejection head (102) selectively ejecting the drawing liquid (104) onto the substrate (16);
- a substrate stage (110) having the substrate (16) mounted thereon; and
- moving means (not shown) for relatively moving the substrate stage (110);
- an inherent control means for controlling at least one of the liquid drop ejection head and the substrate stage;
- a wall (112, 122, both elements are vacuum boxes that keep solvent vapor within boxes and the solvent vapor is introduced into faces 114 and 115 of die 102) projecting from at least one of the liquid drop ejection head (102), the wall (112, 122) cooperating with the at least one of the liquid drop ejection head (102) and the substrate stage (110) to form a solvent vapor trap selectively retaining a solvent vapor (page 5, section 0055).

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior arts are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-5 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolb et al. (Pub No. US 2004/0001921A1) in view of Murakami et al. (US Pat. 6,883,895).

Kolb et al. disclose in Figure 4 a coating apparatus comprising:

- a liquid drop emitter (102) having a liquid drop ejection head selectively ejecting the drawing liquid (104) onto the substrate (16);
- a substrate stage (110) having the substrate (16) mounted thereon;
- moving means (not shown) for relatively moving the substrate stage (110);

Art Unit: 2861

- an inherent control means for controlling at least one of the liquid drop ejection head and the substrate stage;
- solvent outflow prevention means (112, 122, both elements are vacuum boxes that keep solvent vapor within boxes and the solvent vapor is introduced into faces 114 and 115 of die 102) for preventing the solvent from flowing out, the solvent outflow prevention means disposed on at least one of the liquid drop ejection head (102) and the substrate stage (16) (Figure 4, page 5, section 0055);
- wherein a vapor of the solvent is lighter than air; and
- wherein a gap between a bottom edge of the wall (112, 122) and the substrate (16) is greater than or equal to 0.05 mm (Figure 4).

Kolb et al. do not disclose the outflow prevention means that is a wall extending around the liquid drop ejection head at the droplet ejection side; wherein a height of the wall is in a range from 0.1 to 0.4 mm; wherein said wall further comprises a continuous member; and the wall is inclined and/or projected at an acute angle relative to the interior region.

Murakami et al. disclose in Figures 23-27 a liquid ejection apparatus comprising:

the outflow prevention means (8 or 208) is a wall extending around the liquid drop ejection head (5) at the droplet ejection side (an unmarked side that contains element 6);

- wherein a height of the wall (208) is in a range from 0.1 to 0.4 mm (figure 25);
- wherein said wall (8 or 208) further comprises a continuous member.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Murakami et al. into the Knobl et al. coating apparatus for the purpose of providing a liquid jet head for an liquid jet apparatus that can prevent or reduce deposition of an insoluble substance onto the ejection opening portion of the liquid jet head and can make ejection in stable state.

Knobl et al in view of Murakami et al. disclose the claimed invention except for “the wall is inclined and/or projected at an acute angle relative to the interior region”, since it is a mechanical design expedient for an engineer depending upon a particular environment and the applications in which the coating apparatus is to be used for the purpose of keeping vapor solvent within an ejection opening portion of the liquid jet head.

Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolb et al. (Pub No. US 2004/0001921A1) in view of Furusawa (US Pat. 6,734,029).

Kolb et al. disclose the basic features of the claimed invention were stated above but do not disclose an electronic apparatus comprising an electro-optical unit, wherein the electro-optical unit is manufactured by using the drawing device.

Furusawa discloses in Figures 1 and 8-10 a film pattern for an electro-optical device comprising an electronic apparatus comprising an electro-optical unit, wherein the electro-optical unit is manufactured by using the drawing device (column 7, lines 55-67, column 8, lines 28-21 and lines 50-65 and column 12, lines 23-33).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Furusawa into the Kolb et al. coating apparatus for the purpose of selectively applying a liquid material on a substrate to form a conductive film pattern that is used for an electro-optical device.

Allowable Subject Matter

Claim 6 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because none of the prior art references of record discloses a drawing device for applying drawing liquid containing a drawing material dissolved or dispersed in a solvent onto a substrate comprising a solvent reservoir that is disposed on a part of a substrate stage to evaporate the solvent in the combination as claimed.

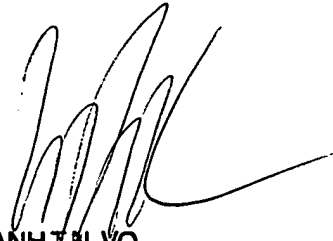
Art Unit: 2861

Claims 7-9 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. These claims would be allowable because none of the prior art references of record discloses a drawing device for applying drawing liquid containing a drawing material dissolved or dispersed in a solvent onto a substrate comprising a vapor of the solvent that is heavier than air and solvent outflow prevention means is a wall extending around a substrate stage combination as claimed.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo whose telephone number is (571) 272-2262. The examiner can normally be reached on Tuesday to Friday from 8:00 A.M. to 6:00 P.M.

The fax number of this Group 2800 is (703) 872-9306.



ANH T.N. VO
PRIMARY EXAMINER
February 9, 2004